

May 2015 extended essay reports

Chemistry EE

Overall grade boundaries

Grade:	E	D	C	B	A
Mark range:	0-7	8-15	16-22	23-28	29-36

The range and suitability of the work submitted

There was a wide range of achievement this session.

The two most common reasons for students failing to perform well were a poor choice of initial research question and failing to address actual chemistry issues in their work.

Unfortunately, in most cases failings can generally be attributed to poor supervision and a lack of familiarity with the assessment requirements and criteria for an EE in chemistry.

Candidates lost marks unnecessarily through failing to comply with very clear guidelines such as, for example, including an abstract that lacked the research question or the conclusion.

As in previous years many of the topics involved the concentration of vitamin C, the use of biodiesel, aspects of water hardness and water purity, the caffeine content of particular consumer products and the use of luminal in forensic science.

Following the trend of the past three years, more essays contain relevant background research rather than going straight into the design of a particular experiment.

Unfortunately the influence of the internal assessment criteria is still evident in Criterion F: application of analytical skills and evaluative skills. Many students write unnecessary pages discussing the accuracy of their equipment and yet do not question either the underlying chemical assumptions they have made or make any attempt to analyse the validity of the secondary sources of data they have used.

Good news is that the amount of essays submitted by students on work they have done whilst attending summer courses at universities has decreased.

Candidate performance against each criterion

Criterion A: research question

It clearly states in the assessment criterion descriptor that the research question should be clearly stated, yet several students did not do this. Some students stated it at the beginning of the introduction or in the title, which is acceptable, but the main flaw here was the lack of focus.

Criterion B: introduction

There was a considerable difference in the quality of some of the introductions written, but in general, this was a criterion in which candidates hardly scored 2. Some really used the introduction effectively to explain how the research question had arisen whereas others gave some background information but did not make the connections as to show how it was relevant to the research question or why the research question was significant and worthy of investigation. In some cases, the introduction was just a series of four or five pages that repeated basic chemical information.

Criterion C: investigation

Unfortunately, only a few candidates considered more than one way of approaching the research question or at least discussed the decisions that led them to tackle the problem in a particular fashion. Some students tried to adapt traditional methods, but only a few attempted a novel approach.

Once again, those students who relied solely on secondary data failed to show that a wide range of resources had been consulted.

Overall, the main drawback was not clarifying what was personal input from third party procedures.

Criterion D: knowledge and understanding of the topic studied

In descriptive essays, it was once again difficult to tell how much actual understanding the student had about the topic chosen or about the method used.

Some good pieces of work briefly explained the underlying theory and also pointed out the possible weaknesses in the technique used, which should be encouraged and celebrated.

Criterion E: reasoned argument

Once again, those students that scored highly produced a convincing argument in relation to the research question. In these cases, ideas were clearly set and students carefully pointed out all aspects of their investigations and conclusions.

Criterion F: application of analytical and evaluative skills

The main issue about this criterion is that students tend to do little more than just discuss the accuracy of the equipment used in their own experiment.

Only a few students analysed the validity of specific resources, or crossed data coming from different sources or/and their own experiments.

Criterion G: use of language appropriate to the subject:

Use of technical vocabulary was rather weak. Some students seemed not to know the IUPAC rules and used colloquial names for chemical compounds.

Units were not used consistently and in some cases not even the IS was used.

There were also many examples of misuse of significant figures and decimal places.

Criterion H: conclusion

This criterion looks at whether the conclusion given is consistent with the body of the essay and is related to the research question.

Weaker candidates tended to give a generalized conclusion and did not include the quantitative outcomes of experimentally determined evidence.

A good conclusion should also point out unresolved questions or further research in the topic chosen.

Criterion I: formal presentation

Most students were able to score at least two of the four marks for this criterion merely by checking that the required elements, such as including a table of contents and numbering the pages, were present. As in previous years the weak areas tended to be using poor or inappropriate diagrams or digital images and using the appendix for material that should be in the body of the essay in order to keep the word count below 4000.

Criterion J: abstract

Unfortunately, once again writing the abstract still seemed to be a problem for many candidates.

There are only three compulsory elements. Some candidates gave a different research question in the abstract to the one written in the introduction or/and in the title and one of the weakest areas was a description of how the investigation was carried out. Some candidates omitted to give relevant quantitative information in the conclusion.

Criterion K: holistic judgement

The majority of candidates did manage to achieve at least two of the four available marks as most showed some personal input and engagement.

Recommendations for the supervision of future candidates

- Schools must ensure that all teachers acting as supervisors are adequately trained before they undertake the task of supervision.
- Supervisors should ensure they are using the latest version of the Extended Essay guide.
- Ensure that students are familiar with the assessment criteria.
- Ensure that students have access to some past examples of excellent chemistry EEs.

- Explain the importance of avoiding a purely descriptive account.
- Encourage students to find at least two or more different approaches to solving their research question.
- Encourage students to analyse secondary sources of data as well as their own experimental method.